

ROYAL ORDNANCE, BISHOPTON



OUTLINE PLANNING APPLICATION FOR THE REGENERATION
OF THE SITE TO FORM A MIXED USE COMMUNITY GROWTH AREA

ENVIRONMENTAL STATEMENT NON TECHNICAL SUMMARY

May 2006

ROYAL ORDNANCE SITE, BISHOPTON

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A MIXED USE COMMUNITY GROWTH AREA

**ENVIRONMENTAL STATEMENT
NON TECHNICAL SUMMARY**

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BAE Systems Environmental
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May 2006

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1 Introduction to the Non-Technical Summary

- 1.1 This non-technical summary provides a generally accessible account of the information that is set out in the Environmental Statement. In turn the Environmental Statement is a key component of an outline planning application for mixed use development at the Royal Ordnance site, Bishopton. It is the outcome of an Environmental Impact Assessment (EIA) process.
- 1.2 The purpose of the non-technical summary is to help the public and non-experts to understand the conclusions of the Environmental Statement.

2 Key Issues

- 2.1 The preparation of the Environmental Statement has been shaped and guided by a Scoping Study (February 2004). This involved Renfrewshire Council and statutory and non-statutory organisations in the identification of the key environmental issues to be examined.
- 2.2 There are many key environmental issues to be considered through the EIA process. The outcome of the assessment of these issues is reported in the Environmental Statement. Amongst the key environmental issues are:
- The effects on local services and facilities that are provided by both the public and the private sectors.
 - The potential for impacts on agricultural land.
 - The road safety and severance effects on local roads arising from changing traffic flows around Bishopton.
 - The impacts on air quality arising from the remediation activities on the site and from the increase in traffic flows.
 - The effects on the noise environment as a result of the remediation¹ of the site and the increase in traffic flows.
 - The potential impacts on soils at the remediation and construction stages of the development.
 - The impacts on the water environment as the site is being remediated and the development related impacts on the surface water regime, including flooding.
 - The consequences for the landscape character and the visual environment arising out of the processes of site remediation and development.
 - The potential impacts on wildlife as a consequence of changes to different habitats on the site.
 - The impacts on important aspects of the architectural and archaeological heritage.

¹ Remediation in its widest sense includes preventing or minimising, remedying or mitigating the effects of land contamination or monitoring the condition of land.

3 Description of the Site and Surroundings and the Project

3.1 The considerable majority of the site comprises contiguous areas of land within, or at the periphery of, the secured boundary of the former Royal Ordnance factory at Bishopton. Land within the planning application boundary extends to around 923 hectares. In addition, the landowner (BAE Systems) owns land at the periphery which is subject to agricultural tenancy (around 84 hectares). Within the boundary of the outline planning application is the Recreation Ground on Greenock Road (3.66ha) and the land required to accommodate the principal road links to the site (3.73ha) (Figure 3.1).

3.2 There are both man-made and natural components which together give the site a particular character.

(1) Elements of the Royal Ordnance Factory

3.3 The Royal Ordnance factory had been in use since 1916, primarily for the manufacture of propellant for supply to the ordnance manufacturing industry. The site contains a large number of buildings (in excess of 2,000) previously used for a variety of manufacturing processes (Figure 3.2).

3.4 The factory was, in essence, a chemical works, importing raw materials in liquid or solid form, and storing and handling those materials prior to processing them into end products of various energetic materials. These materials were handled, packaged and stored pending off-site transport to customers.

3.5 There is a micro landscape associated with the construction of the factory. This comprises the essential mosaic of buildings, bunds and blast structures and the road infrastructure. This is the artificial character of the local landscape.

(2) Natural Elements of the Site

3.6 The woodland character of the site is significant and varied. As a consequence the general impression of the site is enclosed and wooded.

3.7 Woodland is interspersed with significant zones of grassland and scrub. When the factory was in full operation the grassland was managed and cut at regular intervals so as to minimise fire risk. However, since the cessation of activity the flora in the open parts of the site is evolving to a rough grassland character with signs of scrub invasion.

3.8 The natural landform of the site can be separated into two distinct zones. On the northern and western margins of the site there is undulation in the natural morphology with raised landforms (Figure 3.3). The southern and central zone of the site is more low-lying and level, forming a drainage basin for the River Gryfe beyond the southern boundary of the site.

Bishopton and the Surrounding Area

3.9 The site lies on the western edge of Bishopton. The division between the site and the built up area of Bishopton is provided by the railway (the Glasgow to Wemyss Bay / Gourock route). Whilst the railway is a barrier to movement between the site and the village there are three points of linkage – along Station Road and a link under the railway, along Newton Road and at Rossland Crescent.

3.10 The Station Road approach has provided the principal linkage between the site and the strategic road network. Station Road is significant to the urban morphology of Bishopton. It is a corridor which serves multiple functions – as the service route to the railway station and the associated Park and Ride facility, as the route to a small commercial hub in the vicinity of the

station, as the access for residential properties as well as the primary route to the site (adjacent to the security control point).

- 3.11 The current population of Bishopton is in the region of 5,175 with a stock of 1,895 households (2001 census). The 2005 Housing Stock and Tenure Analysis shows that in Bishopton housing is 92.3% owner-occupied, 5.3% local authority owned and 2.4% private rented.

The Project

- 3.12 To a considerable extent the demand for the development, and its essential purpose, is provided by the adopted Glasgow and the Clyde Valley Joint Structure Plan 2000 and the draft 2006 Structure Plan Alteration. Strategic Policy 2 in the 2000 Plan required Bishopton (and Gartloch – Gartoch) to be assessed in terms of the potential for strategic environmental renewal and the development of housing, business and industrial development post 2006. The draft 2006 Alteration recognises that this potential has now been assessed and is reflected in the designation of the site as a Community Growth Area.

- 3.13 Alternative approaches to redeveloping the site have been examined over a period of five years. A series of reports has been prepared and shared with key stakeholders. The outcome of the assessment of alternatives is that the appropriate and sustainable approach is an integrated mixed use development representing the managed expansion of Bishopton.

- 3.14 There are a number of fundamental features to the integrated mixed use development. In combination, these features give character to the project. The key features are:

(1) A Range of Uses and Tenures

- 3.15 The integrated mix of uses and activities will include housing (at around 2,500 units) of different sizes, styles and tenures together with significant opportunities for business development. The business development will take place either in a designated Business Park or, at a smaller scale, in the mixed use core of the development.

- 3.16 There will be complementary community infrastructure. This includes built facilities (such as health centre and primary school) and more informal infrastructure such as the network of open spaces.

(2) Treatment of Derelict and Contaminated Land

- 3.17 A remediation strategy provides a framework for the treatment of derelict and contaminated land. This addresses land contamination issues but also the process of decontaminating buildings, particularly those that have been used for explosive purposes.

(3) Urban Form and Masterplan Principles

- 3.18 A masterplan provides the broad framework for long term development of the site (Figure 3.4). This has been influenced by a range of technical issues such as variations in the condition and quality of the underlying ground as well as development parameters such as the need to integrate new development with the existing village of Bishopton.

- 3.19 An overriding objective of the masterplan is to achieve a sustainable form of development. This is to be secured in many ways but one key feature is the close relationship between the new development and the public transport infrastructure. This is important as it will provide choice in the mode of travel by local people.

(4) Infrastructure Improvements

- 3.20 In order to facilitate the development there is a need to strengthen the primary infrastructure. This includes a new drainage infrastructure for the site; the provision of new links from the site to the strategic road network and the extension or reinforcement of utility provision.

(5) Integration with Existing Community

- 3.21 The project represents the managed expansion of Bishopton over a period of up to 15 years. It is not an isolated and independent development. There is a strong need to integrate the new development with the existing community. This is achieved in a number of ways including physical integration using existing links and new links; the delivery of new or improved community infrastructure within the development and the existing village and the widening of choice in the local housing and employment markets.

(6) Links to the Fixed Public Transport Network

- 3.22 The fulcrum of the project is provided by Bishopton rail station. The development is planned to give ready links to the station. Beyond this, however, the project incorporates an extension to Park and Ride facilities together with the upgrade of bus services.

(7) A New Urban Boundary

- 3.23 The land use plan shows the long term limit of the Community Growth Area (Figure 3.5).

(8) Access to Social and Community Facilities

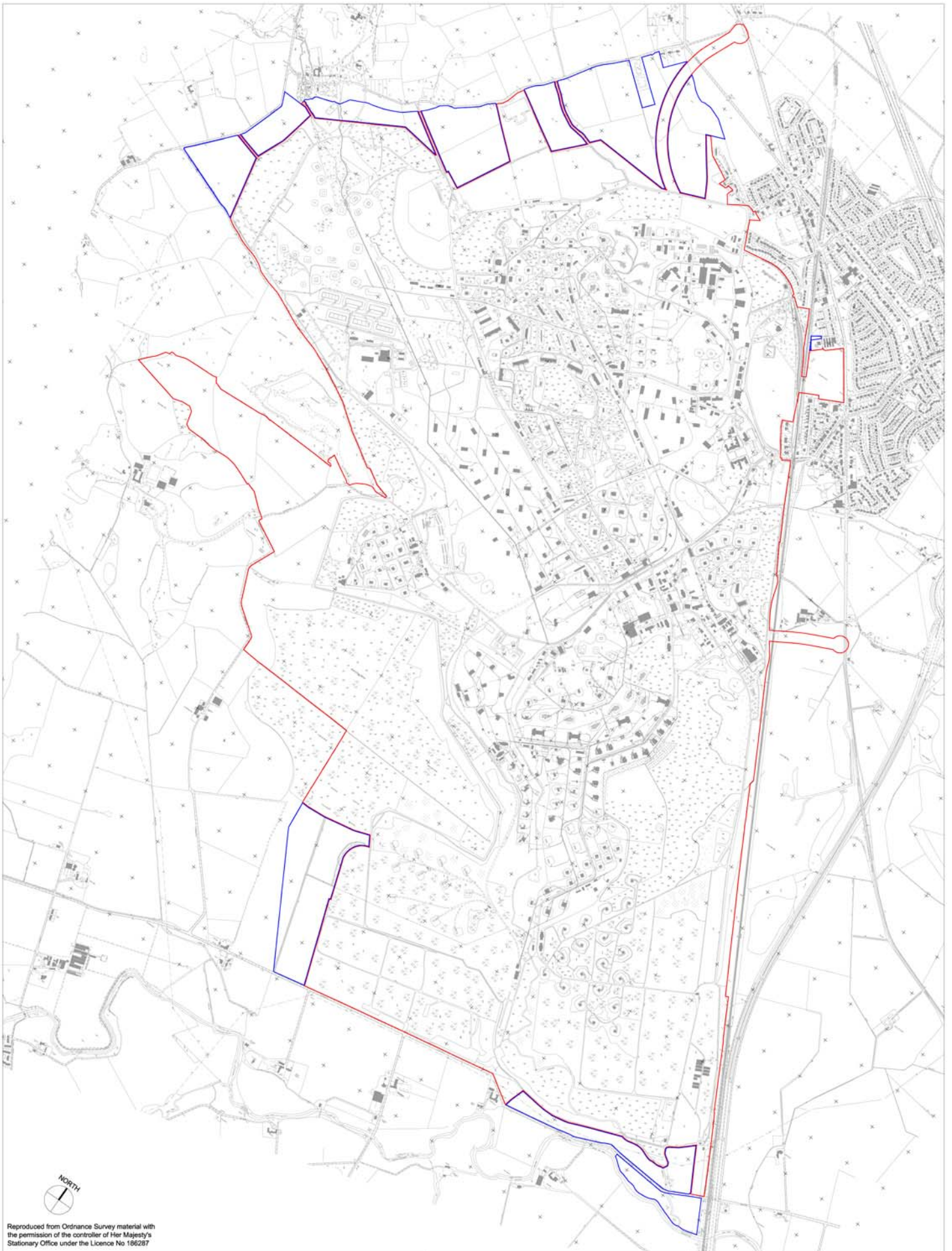
- 3.24 An integral part of the project is the phased delivery of improved or new community infrastructure, commensurate with the phased expansion of Bishopton.

(9) Contributions to a Green Network

- 3.25 A substantial majority of the site will form a Community Woodland Park. This will become part of a green network which extends across the metropolitan area.

Sequence of Development

- 3.26 The development will proceed as a managed expansion of the existing community of Bishopton. For the purpose of the project planning six phases have been identified. These run between 2009 and 2022 (Figure 3.6). Within each phase different components of the mixed use development will be delivered, including the essential infrastructure to support the development.
- 3.27 The different phases of development are preceded by associated phases of remediation. The remediation method across all phases will follow the working principles set out in the remediation strategy.



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- PLANNING APPLICATION BOUNDARY
- OTHER LAND IN THE OWNERSHIP OF BAE SYSTEMS

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**BOUNDARY OF OUTLINE
 PLANNING APPLICATION**

ROYAL ORDNANCE, BISHOPTON


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 date 06.01.06
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FIG 3.1



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NOTE:
 Surrounding photography by BAE Systems
 Site Aerial photography by Loy Survey 2005

 BAE Systems Land Ownership

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AERIAL PHOTOGRAPH OF THE SITE

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ROYAL ORDNANCE, BISHOPTON

FIG 3.2



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BAE Systems Land Ownership

1) HISTORIC PLANTING AND WOODLAND

- 2) OTHER MATURE BROADLEAVED PLANTING
- 3) PLANTATION WOODLAND
- 4) SCRUB AND MIXED WOODLAND
- 5) WATERSIDE PLANTING

- Dense softwood Plantations
- 0-5 years Youngest
- 5-10 years
- 10-20 years
- 20+ years Oldest

NOTE
Compiled from aerial photographs, dated 2001, approximate not verified on the ground.

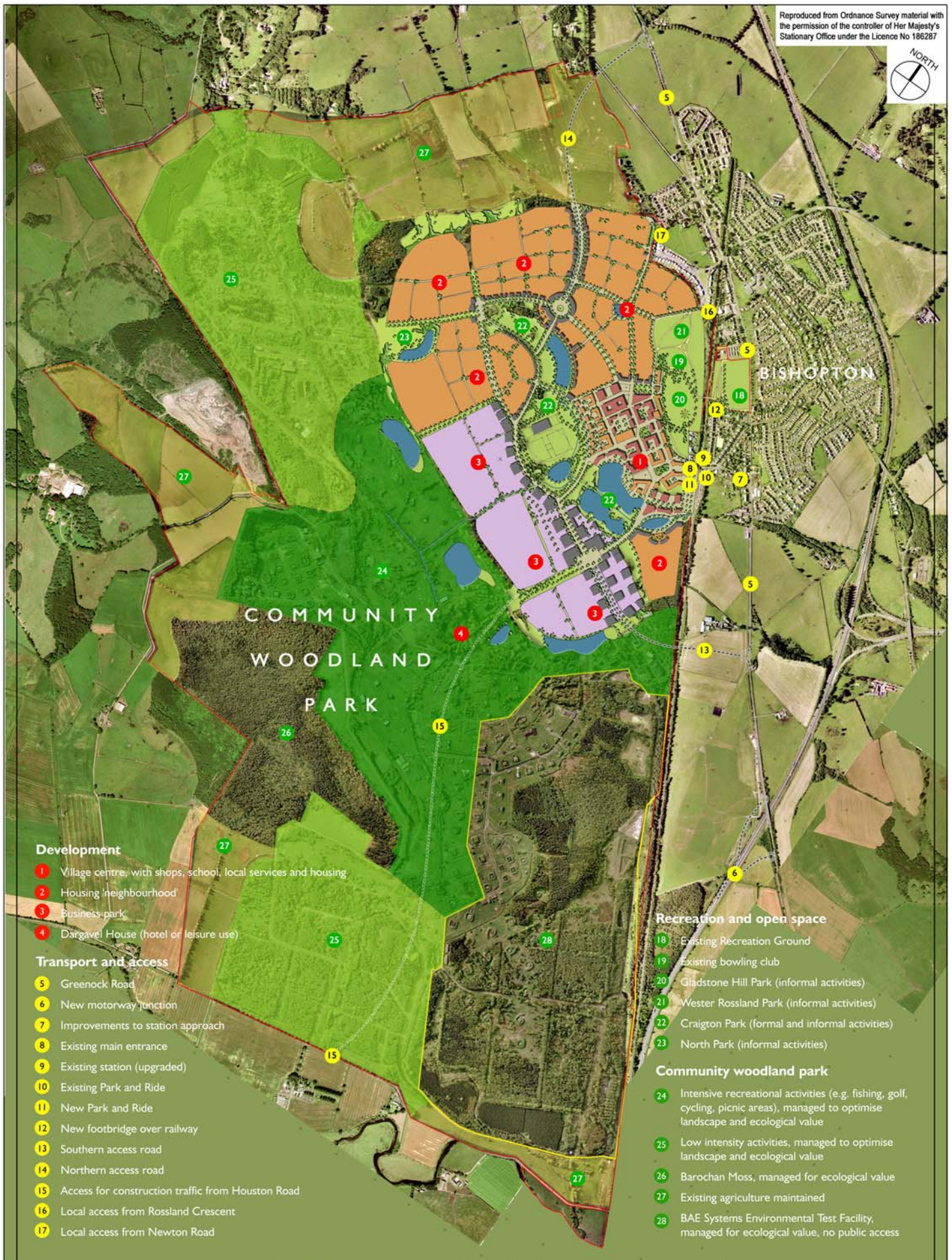
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ROYAL ORDNANCE, BISHOPTON

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CATEGORISATION OF WOODLAND BY TYPE AND CHARACTER

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FIG 3.3



Development

- 1 Village centre, with shops, school, local services and housing
- 2 Housing 'neighbourhood'
- 3 Business park
- 4 Dargavel House (hotel or leisure use)

Transport and access

- 5 Greenock Road
- 6 New motorway junction
- 7 Improvements to station approach
- 8 Existing main entrance
- 9 Existing station (upgraded)
- 10 Existing Park and Ride
- 11 New Park and Ride
- 12 New footbridge over railway
- 13 Southern access road
- 14 Northern access road
- 15 Access for construction traffic from Houston Road
- 16 Local access from Rossland Crescent
- 17 Local access from Newton Road

Recreation and open space

- 18 Existing Recreation Ground
- 19 Existing bowling club
- 20 Gladstone Hill Park (informal activities)
- 21 Wester Rossland Park (informal activities)
- 22 Craighton Park (formal and informal activities)
- 23 North Park (informal activities)

Community woodland park

- 24 Intensive recreational activities (e.g. fishing, golf, cycling, picnic areas), managed to optimise landscape and ecological value
- 25 Low intensity activities, managed to optimise landscape and ecological value
- 26 Barochan Moss, managed for ecological value
- 27 Existing agriculture maintained
- 28 BAE Systems Environmental Test Facility, managed for ecological value, no public access

	BAE Systems land ownership		Housing
	BAE Systems Environmental Test Facility		Landscaping and open space
	Mixed uses (housing, commercial and community facilities)		Commercial

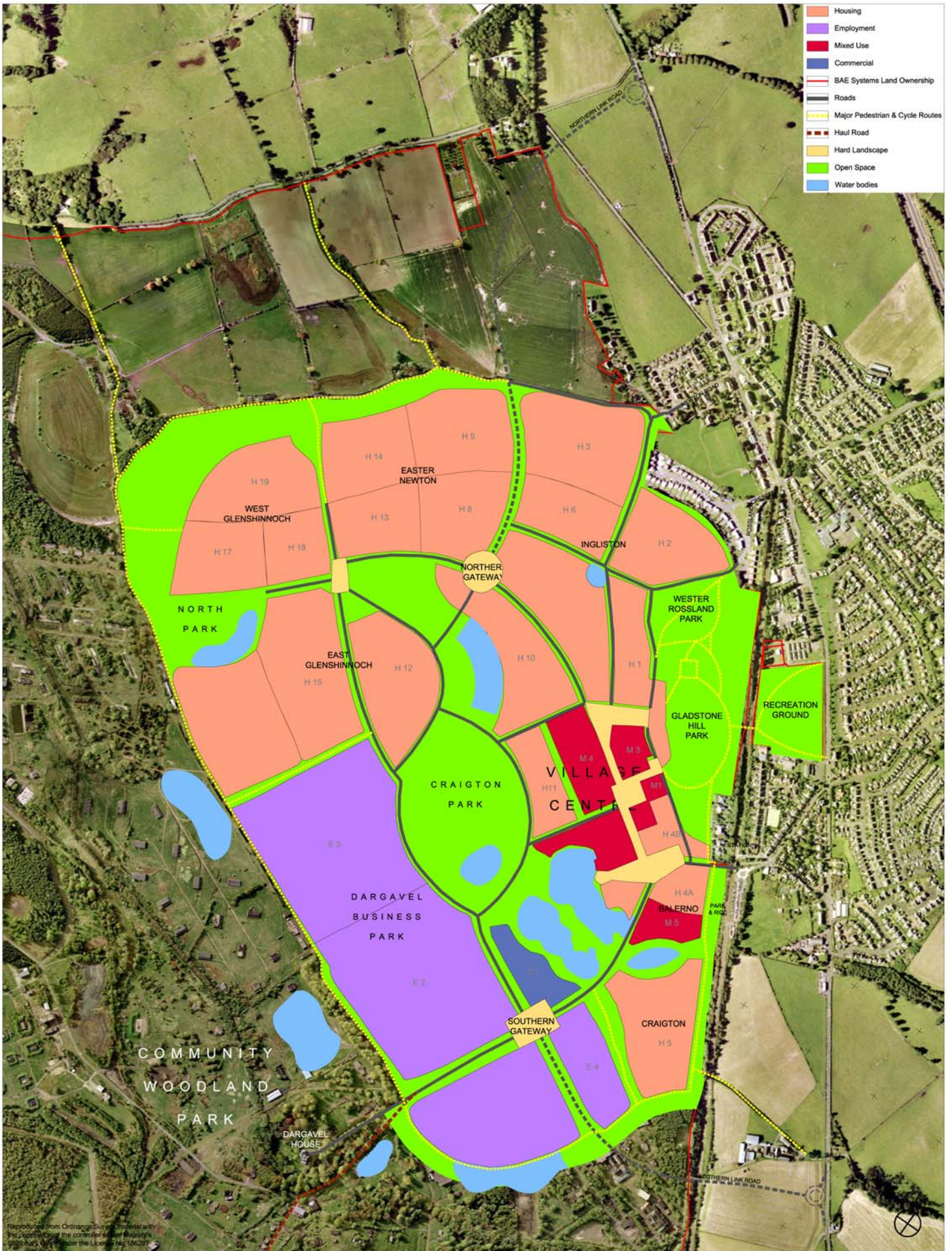
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ILLUSTRATIVE MASTERPLAN

ROYAL ORDNANCE, BISHOPTON

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FIG 3.4



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<p>Cass Associates Studio 104 The Tea Factory 82 Wood Street Liverpool L1 4 DQ Tel 0151 707 0110 Fax 0151 707 0332 Email: all@cassassociates.co.uk</p>	<p>drawing title LANDUSE PLAN</p>	<p>scale 1:12,500 @ A4 date 21.12.05 dm SW</p>
<p>ROYAL ORDNANCE, BISHOPTON</p>		<p>FIG 3.5</p>

PHASE 1

PHASE 2

PHASE 3

PHASE 4

PHASE 5

PHASE 6



- Housing
- Employment
- Mixed Use
- Commercial
- Public Open Space
- Enabling works
- Key Link
- Haul Road
- BAE Systems Land Ownership

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drawing title
SIX PHASES OF DEVELOPMENT

ROYAL ORDNANCE, BISHOPTON

scale NTS
 date 20.10.05
 drn SW

FIG 3.6

4 Plans and Policy Context

4.1 The Environmental Statement describes how development plans and other policies have been taken into account in developing the project.

National Policy and Guidance

4.2 The national policy and guidance context consists of four types of document produced by the Scottish Executive:

- National Planning Framework
- Scottish Planning Policies
- Circulars
- Planning Advice Notes

(1) National Planning Framework for Scotland

4.3 The National Planning Framework was published in 2004 by the Scottish Executive following extensive stakeholder involvement. It provides a framework to guide the spatial development of Scotland to 2025, and sets out a vision of Scotland in which other plans and programmes can share. It is not intended to be a prescriptive blueprint, but is a material consideration in framing planning policy and making decisions on planning applications and appeals.

4.4 Bishopton is specifically identified as the preferred location for long-term expansion to the west of Glasgow: “Good transport connections make Gartcosh and Bishopton the preferred locations for long-term expansion to the east and west of Glasgow.” [Paragraph 155].

(2) Scottish Planning Policies

4.5 Scottish Planning Policies (SPPs) provide statements of Scottish Executive policy on nationally important land use and other planning matters. They were known as National Planning Policy Guidelines (NPPGs) until 2002. Existing NPPGs have continued relevance to decision making until they are replaced by a SPP. There are currently nineteen SPPs which, together, provide a wealth of policy guidance for all stakeholders in the planning system.

(3) Planning Circulars

4.6 Circulars, like SPPs, provide statements of Scottish Executive policy. However, they differ from SPPs in that they contain guidance on policy implementation through legislative or procedural change.

(4) Planning Advice Notes

4.7 Planning Advice Notes (PANs) provide advice on good practice and other relevant information. They are not statements of policy, and are therefore of lesser importance as material planning considerations than Scottish Planning Policies, Circulars or the development plan. There are currently over forty Planning Advice Notes in force, many of which have relevant content for this site.

Regional and Local Policy

4.8 The starting point is the Glasgow and the Clyde Valley Joint Structure Plan 2000.

4.9 In order to give flexibility in meeting longer-term development needs the 2000 Plan points to the need to examine the development potential of two locations – the Royal Ordnance Factory at Bishopton and the former Steel Works at Gartcosh – Gartloch. At these locations there are

major challenges surrounding renewal and regeneration but also the potential to link new development to the strategic transport network.

- 4.10 The two sites are subject to Strategic Policy 2 of the Structure Plan which in full states the following:

STRATEGIC POLICY 2

LONG TERM POTENTIAL FOR DEVELOPMENT

Planning Authorities will assess the potential of the following areas (Schedule 2 and Key Diagram) for strategic environmental renewal and the development of housing, business and industrial uses to contribute to the requirement for development land post 2006. This shall be based upon the Guiding Principles of Sustainable Development and the criteria in Strategic Policy 9. Any significant proposals for the development of these areas will require to be confirmed in terms of their impact and need through a subsequent Alteration to the Structure Plan.

Schedule 2

- (a) Bishopton (Royal Ordnance Factory)
- (b) Gartcosh - Gartloch

- 4.11 There are three key themes in the 2000 Structure Plan. These have a bearing on the regeneration of the Royal Ordnance site. The three themes are:

Theme 1: Strengthening Communities

- 4.12 This aims to concentrate development at sustainable locations in and around existing settlements in a way which will maximise and sustain the use of existing services and infrastructure.

Theme 2: Corridor of Growth

- 4.13 The main opportunities for future development fall along a corridor that is centred on the River Clyde. The development at the Royal Ordnance site will complement initiatives in this defined corridor of growth.

Theme 3: Green Network

- 4.14 The aim is an overall enhancement of environmental quality through the creation of a green network across the metropolitan area.
- 4.15 The 2000 Plan is currently subject to review. A Draft Alteration to the 2000 Plan has been finalised by the Glasgow and the Clyde Valley Structure Plan Joint Committee (the 2006 Alteration). It has been submitted to the Scottish Ministers for approval.
- 4.16 One significant implication of the 2006 Alteration relates to Urban Expansion Areas. The 2000 Plan identified 14 established areas for urban expansion. The 2006 Alteration recognises that further land capacity is required to meet the scale of development that will arise from the Agenda for Sustained Growth. New expansion areas are required. These are designated as Community Growth Areas.
- 4.17 The Community Growth Areas relate to key transport corridors. The Western (Glasgow – Greenock) Corridor harbours the Royal Ordnance site at Bishopton. It is the principal

Community Growth Area in this corridor in accordance with the fact that the National Planning Framework for Scotland recognises the site as the preferred area for long-term expansion to the west of Glasgow.

- 4.18 Renfrewshire Local Plan was adopted in early 2006.
- 4.19 The Local Plan states that “there are a number of areas of potential change, and development opportunity sites, where co-ordinated action is required or which are of a size and nature which make them a high priority for the Council. ... There will be a presumption in favour of the redevelopment of these brownfield sites, provided such redevelopment is consistent with the principles of sustainable development and accords with the policies of the structure and local plan.” (paragraph 2.14)
- 4.20 One of these sites is Royal Ordnance Bishopton, which is the subject of paragraphs 2.19 to 2.22 and Policy SS2. The text of these paragraphs is as follows:

(para.2.19) The RO Bishopton site covers an area of approximately 950 hectares, Manufacturing activity at the plant ceased in 2002 although the administration block is still in use, temporarily and largely related to the decommissioning of the site. Additionally, the Environmental Test Facility will remain operational for the foreseeable future. This operation will have a requirement for a safeguarding zone which is presently under discussion with the Health and Safety Executive and which will impact on future use of the site. A Working Group was established by the Scottish Executive in December 1999 to optimise the potential of the site after closure, including exploration of potential uses, amongst other objectives. The Structure Plan includes a specific policy covering the future study of the site (Strategic Policy 2) and states that consideration will be given to the outcome of the Working Group. It also promotes the preparation of a masterplan to test the feasibility and impacts of longer term expansion for housing and employment generating uses at this location.

(para.2.20) BAE Systems have appointed consultant to prepare a masterplan for the RO Bishopton site. This will be undertaken in accordance with the Structure Plan’s policies, aims and principles and will investigate the potential of RO Bishopton to contribute to the requirement for development land post 2006. The site is also recognised as a potential Single User High Amenity site for inward investment and the site’s potential for this purpose is being examined as part of the masterplanning exercise.

(para.2.21) The masterplanning exercise is based on the following principles:

- a. Strengthening the existing community of Bishopton by enhancing community infrastructure.*
- b. Sustainable development, including minimising private car use, safeguarding high value environmental resources, measures to reduce energy consumption, and sensitivity to resource carrying capacities.*
- c. Effective remediation, reclamation and reuse of the entire site, including sustainable treatment of undeveloped areas for appropriate countryside uses.*

(para 2.22) The study has identified a hypothetical 15 year development scenario, and will test its feasibility and impacts upon Bishopton, Renfrewshire and the sub-region as appropriate. Proposals for the site will then need to be confirmed through the statutory planning process. Pending the outcome of the masterplanning exercise, the site remains covered by a policy reflecting its previous use.

POLICY SS2: Royal Ordnance Bishopton

The Council:

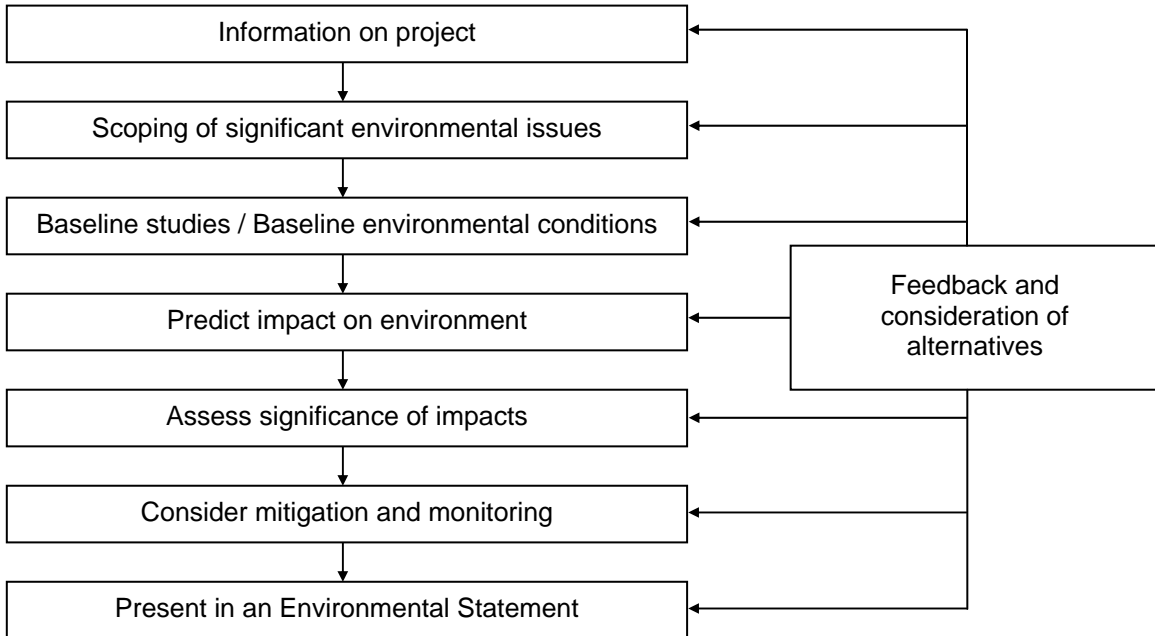
- a. Requires the environmental renewal and future development potential of the Royal Ordnance Bishopton site to be assessed.
- b. Will require the proposed development of the site to be the subject of a masterplan.
- c. Will require the masterplan to be compatible with the Structure Plan's strategic planning framework and with Local Plan policies.
- d. Will assess the acceptability of the masterplan and will consider, among other things:
 - the extent of the remediation of the Royal Ordnance site which will be achieved,
 - infrastructure provision including community facilities and services, and
 - the impact of the proposals on the existing settlement of Bishopton.

Pending the Council's decision of the future use and development of the land, the site will be safeguarded for its established use.

5 Introduction to the Assessment of Environmental Effects by Topic

5.1 This Environmental Statement is an integral part of the Environmental Impact Assessment (EIA) process. It is a document which brings together the results of the EIA process.

5.2 The EIA process which has been followed can be summarised in a flow diagram :



5.3 For each environmental topic there has been an extended period of collecting baseline information. This has involved desk studies, field surveys and consultation with other experts and bodies. For many of the environmental topics this process has extended over many years.

5.4 The predictions of a range of impacts has been undertaken for each environmental topic. This has involved the analysis of potential causes of change to the existing environment and the determination of likely effects.

5.5 In the instance of each environmental topic there is an evaluation of the relative significance of the impact taking into account matters such as the extent of the impact, the time scale, the frequency of the impact, the relative sensitivity of the receptor and the capacity of the receiving environment to absorb impacts.

5.6 Consideration is given to the mitigation measures which can be introduced to avoid, reduce or remedy any significant adverse effects. It is recognised that the most satisfactory form of mitigation is avoidance (often through project design) but where this is not possible mitigation proposed is by way of reducing the severity of an impact or providing a form of compensation. In some instances, enhancement or improvement of aspects of the environment will provide a net benefit.

6 Socio-Economic Impacts

- 6.1 Socio-economic impacts on the local population, such as on housing and local services and facilities, are pertinent to an Environmental Statement.
- 6.2 At present Bishopton is served by a primary tier of community services and facilities, but for a higher level of provision there is heavy reliance on larger neighbouring settlements such as Erskine, Renfrew and Paisley. The consequence of this is that existing residents travel significant distances to access the wider range of facilities and services available in the larger urban area.
- 6.3 The managed expansion of Bishopton presents an opportunity to greatly improve the services and facilities available to local residents, particularly bearing in mind the likely future changes in demographics for the village. Public and private providers will need to work in tandem to ensure that the potential to deliver more effective and efficient local services is realised. The ultimate objective is to maximise the level of patronage for local services and facilities and, as a consequence, reduce the length and number of trips made by local people. This will contribute to the sustainability agenda which runs through national, regional and local planning policy and guidance.
- 6.4 A broad review of a range of community services has been progressed with a view to how these might respond to the long time horizon associated with the managed expansion of Bishopton. Some services will be privately funded, others will be reliant on public funding but it needs to be recognised that the hybrid of public-private partnerships (PPP) could generate the greatest benefits.
- 6.5 Health care is a priority need and the development will need to make provision for a significantly enhanced health centre. There is likely to be a need for a non-denominational primary school, with the scale of the facility and the timing of provision to be agreed with Renfrewshire Council.
- 6.6 Other aspects of the community infrastructure required as a consequence of the managed expansion of Bishopton include retail/commercial facilities, a new public transport interchange, facilities for recreation and leisure, the upgrade of existing facilities such as the library and the community hall and opportunities for places of worship.
- 6.7 There are potential impacts on the community which relate to severance and community identity. In order to address these impacts there is a strong emphasis on how new development is integrated into Bishopton. This integration can be secured in many ways, including:
- (a) Minimising the divisive presence of the railway line by constructing a new pedestrian bridge directly linking the existing recreation ground and Community Centre with the proposed village core, health centre, primary school and park, along with environmental improvements and traffic management to the three existing accesses into the site (Station Road, Rossland Crescent and Newton Road).
 - (b) Ensuring that the A8 within Bishopton is not adversely affected by increased volumes of traffic. The amount of vehicular traffic generated by the proposed development will be minimised by the accessibility of the railway station and the way in which the compact design of the masterplan is focussed around it. The additional vehicular traffic that is generated will access the proposed development through new link roads connecting directly with the A8 on either side of the village, so avoiding additional traffic through the village along the A8. (Construction traffic will not travel through the existing settlement.)

- (c) Strengthening the village core with improved and additional community, retail and commercial facilities for the whole settlement to share. Some of these will be improvements to existing facilities (such as the library, community centre, and recreation ground). Others will be new facilities to serve the entire settlement (such as a health centre, a supermarket, specialist housing for elderly people, the Community Woodland Park, retail units and a hotel).
- (d) Providing greater flexibility and choice in the housing market, not only by increasing the total number of residential properties available but by targeting types of housing provision which are currently under-represented in the existing housing stock (such as flatted properties, specialist housing for elderly people, and rented accommodation). This will encourage moves between the existing settlement and the proposed development. Given the 15 year development period, this will have a significant role in encouraging social integration.
- (e) Creating new employment opportunities, both in the Business Park and in commercial and other opportunities in the proposed village core and elsewhere in the proposed development. Again, this will provide increased opportunities for people to work in the village, as well as contributing to social integration.

7 Effects on Major Land Uses

- 7.1 There is projected to be limited impact on the primary land uses of agriculture, active forestry and recreation and leisure. Of these three uses, agriculture is dominant.
- 7.2 Within the bounds of the planning application site but beyond the factory security fence are a number of fields used for agriculture. In addition, there is contiguous land in agricultural use which is in the ownership of BAE Systems (around 84 hectares in total).
- 7.3 Impacts on agriculture as a consequence of the development will be negligible. There is the opportunity to enhance the bio-diversity value of agricultural land within the application boundary through measures such as enhanced hedgerow planting and appropriate land management. However, these measures do not exclude continued agricultural use.

8 Effects from Traffic

Accidents, Road Safety and Severance

- 8.1 The historical Personal Injury Accident record for the network around Bishopton has been reviewed and the increase of traffic through the village could be detrimental to road safety. However the development access strategy will minimise the impact of additional development traffic through the village and hence ensure that there is no disbenefit either in terms of road congestion or road safety on existing residents.
- 8.2 It is proposed that Newton Road, Rossland Crescent and Station Road, will be used to access the new development at phase 1 prior to the construction of the new access roads. Traffic calming and traffic management measures will be installed to allow these roads to operate in a safe and efficient manner. Greenock Road will also be examined and appropriate facilities, such as pedestrian crossings will be provided. In addition, the provision of pedestrian barriers will ensure crossing at inappropriate points is deterred. The mitigation measures will be installed prior to any development taking place.

Driver Delay

- 8.3 Assessments have, where appropriate, been undertaken on the adjoining road network to establish the existing average vehicle delay during the weekday peak hour periods when traffic flows are at their greatest. The predicted traffic flows arising from the development have then been added and further operational assessments undertaken to establish the average vehicle delay following construction of the Project. The change in average vehicle delay as a result of the development proposals is assessed as insignificant to slight.

Pedestrian Delay and Amenity

- 8.4 The development proposal and related traffic may result in additional pedestrian delay. Pedestrians will continue to use the existing infrastructure in the area. The development will bring about increases in the number of vehicle movements and moderate increases in the number of pedestrian movements. In general, increases in traffic levels are likely to lead to small increases in delay to pedestrians seeking to cross roads. Issues of pedestrian amenity are typical of an urban environment. However, the development is not expected to have any material negative impact on amenity.

Public Transport

- 8.5 Bishopton station is located on the Glasgow Central to Wemyss Bay and Glasgow Central to Gourock electric line, providing easy access to the wider rail network. At present, park and ride facilities at the station consist of approximately 100 parking spaces with bus/rail interchange facilities being provided in the form of a bus turning circle and bus stance.
- 8.6 Demand for parking at the station is estimated to increase to 250 by completion of the development. Hence, the minimum size of the new car park at Bishopton Station should be 150 spaces given the 100 existing spaces. To allow for future expansion, land to accommodate an additional 150 parking spaces will be set aside for possible future expansion of the car park.
- 8.7 Assessment of the potential additional demand for bus travel indicates a need to consider provision of a local peak and inter-peak period service connecting housing, shops and facilities in the existing village of Bishopton and in the proposed development site as well as extending the existing local services to Erskine which could link to the wider network via the bus station at Erskine. Additionally, more peak journeys could be provided to/from Renfrew and Glasgow. A weekday peak period bus link could be provided to the employment in Bishopton from communities in the Linwood, Houston and Bridge of Weir areas.

9 Effects on Air and Climate

- 9.1 The dominant impact on air quality in the vicinity of the application site is from vehicles using the surrounding road network.
- 9.2 The impact of the development on air quality was assessed by predicting the impact of road traffic from the development at sensitive receptors and across the entire site. Two scenarios were assessed for three different stages – with and without the proposed redevelopment in 2009, 2015 and 2022. Concentrations of nitrogen and particulate matter were assessed for these years to predict the impact from the development over its entire life cycle.
- 9.3 The modelling assessment results show that predicted concentrations for nitrogen dioxide and particulate matter are not significantly affected by the traffic associated with the development and that the assessed concentrations for both these substances would not exceed present and future Air Quality Objectives, across the entire site and at any of the sensitive receptors.
- 9.4 Renfrewshire Council has declared an Air Quality Management Area within the urban centre of Paisley. No such areas within close proximity to the site have been declared. Therefore, Renfrewshire Council does not expect Air Quality Objectives to be exceeded at the site or in the surrounding area. This is in line with the results of the air quality assessment. There are no significant sources of odour close to the site. Therefore, the site is deemed suitable for development with regards to odours and air quality.
- 9.5 The impacts on air quality resulting from the regeneration of the site were assessed for remediation, decontamination and construction activities. Impacts during this phase were assessed qualitatively and quantitatively. The use of appropriate mitigation measures suggested should be sufficient to control dust and smoke emissions to an acceptable level. There would be no significant impact on dust levels surrounding the site, once the redevelopment becomes fully occupied in 2022.
- 9.6 It is concluded that the application site is suitable for residential development and that the redevelopment of the site would not have a significant affect on air quality in the surrounding area.

10 Effects on Noise and Vibration

- 10.1 A noise and vibration assessment has been carried out to determine the potential impacts of the development on the existing environment, in terms of construction, operational and traffic noise. The assessment has also determined the suitability of the proposed site for residential development. The implications of the existing noise environment have been demonstrated, with measures identified for the effective control or mitigation of noise.
- 10.2 A noise monitoring exercise was carried out at seven representative locations in the vicinity of the proposed development site, in order to provide information on the existing daytime and night-time noise environment.
- 10.3 Noise levels were predicted in terms of construction noise associated with the project. Construction noise levels are unlikely to be significant at most of the identified noise sensitive receptors for the potentially temporary nature of the construction phases and associated activities. Where predicted noise levels exceed established criteria, it is recommended that both active and passive noise control measures are in place during each phase and working task of the development.
- 10.4 Noise associated with traffic generated by the project will not give rise to significant noise impacts or significantly increase the background noise levels at any receptor. Where noise levels are likely to increase over a period of time and exceed guidance, it has been predicted that basic noise levels will not exceed the criteria given in the Noise Insulation Regulations 1988 and as such noise abatement action will not be required.

11 Effects on Geology and Soils

- 11.1 The former Royal Ordnance factory in Bishopton ceased manufacturing in 2002 and proposals have been prepared to bring the site back into beneficial use. Included in these proposals is the requirement for land contamination issues to be assessed and appropriately addressed as a material planning consideration. This is a result of the site's 80 year industrial history when the factory was subjected to a range of activities resulting in a number of contamination sources being identified across the site.
- 11.2 A comprehensive Stage 1 Site Investigation was undertaken across the site in 2005 in order to characterise the contamination at the site. This, together with information from previous more targeted investigations, has provided information on the extent of the contamination present on the site and allowed an assessment to be made as to what remediation is required to make the site suitable for its proposed new uses. The investigations have also provided a more detailed insight into the site's geological conditions. Such information is important in assessing how contaminants might move and behave in the environment.
- 11.3 In undertaking a large scale remediation/development project and by the very nature of the activities involved, impacts to the soils and geology is unavoidable. However, it should be noted that with the contamination that has been identified on the site it is expected that the overall impact from the remediation and operational phases of the development will be positive.
- 11.4 The magnitude and significance of all potential impacts, both positive and negative, have been identified and assessed. Following this, and taking account of any uncertainty in the assessment, appropriate mitigation measures have been identified for all those activities where there is the potential of a negative impact whether they are considered significant or not.

- 11.5 It should also be noted that the impacts identified are all commonly encountered on brownfield land redevelopment and mitigation measures are well established and within the normal capacity of the construction industry to implement. Notwithstanding this, a Management Plan will be produced to ensure the successful implementation of the mitigation measures in line with key regulations and good practice guidance.
- 11.6 The primary objective of the Management Plan is to establish a protocol to ensure that health and safety standards are maintained throughout the site works and to minimise the impact of the site works on the surrounding environment.
- 11.7 More specifically, and in relation to the effects on geology and soils, the Management Plan will include the following subject areas:
- General Environmental Management (including regulatory approvals)
 - Ecological Management
 - Archaeological Management
 - Woodland Management
- 11.8 In conclusion, following the implementation of the Management Plan and associated mitigation measures it is expected that the overall impact on the site will be positive resulting in the safe and successful management of the contamination that is currently impacting on the soils and geology.
- 11.9 The impacts will be measured through the implementation of a verification plan which will be adopted to demonstrate the effectiveness of the remediation in terms of meeting the remediation objectives. This will be reported in a series of verification reports as each phase of the remediation is completed.

12 Effects on Water

- 12.1 The Dargavel Burn runs through the centre of the site flowing into the River Gryfe at the southernmost tip of the site. Along its length the Burn is joined by numerous ditches, drainage pipes, former process water drains and small streams, some of which emanate from outside the factory boundary.
- 12.2 Craigton Burn enters the site at the eastern boundary just south of Bishopton village and flows in a northeast to southwesterly direction. It is joined by Cordite Burn, which flows from the northern boundary, before meeting Dargavel Burn near the centre of the site.
- 12.3 Groundwater is generally present at shallow depths across the site within superficial deposits (1-2 metres below ground level) although deeper bedrock aquifers have also been identified in some parts of the site.
- 12.4 In order to establish the current quality of the water environment, surface water and groundwater monitoring was incorporated into the Stage 1 Site investigation. This supplements a period of three years monitoring of historic boundary boreholes and surface water monitoring locations.
- 12.5 In summary, the quality of both the groundwater and surface water has seen a marked improvement since the cessation of manufacture at the factory in 2002. However there are indications that some contamination may be continuing to impact on the water environment

although the significance of this impact is to be determined during the proposed Stage 2 Site Investigation.

- 12.6 In undertaking a large-scale remediation/development project and by the very nature of the activities involved, impacts to the water environment are possible. The most significant impact is considered to be due to silt entering watercourses. In addition, there is the possibility of mobilisation of contaminants as they are disturbed. However, much of the remediation planned to deal with soil contamination is associated with source removal or treatment and as such will also have an overall positive impact on the quality of the water environment where it was being affected previously.
- 12.7 The magnitude and significance of all potential impacts, both positive and negative, have been identified. Following this, and to take account of any uncertainty in the assessment, appropriate mitigation measures have been identified for all those activities where there is the potential of a negative impact whether they are considered significant or not.
- 12.8 The mitigation measures relating to the protection of the water environment will be adopted through the implementation of the Management Plan (referred to in the previous section).
- 12.9 To ensure the protection of the water environment a number of pollution prevention measures and emergency procedures are to be incorporated into the Management Plan.
- 12.10 The development falls in an area deemed to be at risk from flooding. A Flood Risk Assessment (FRA) has been produced to demonstrate the extent of the risk. The outcome of the FRA is a series of measures to mitigate flood risk. This includes engineering work to drainage channels and the delivery of a sustainable drainage system.
- 12.11 In conclusion, following the implementation of the Management Plan it is expected that the impact of the remediation/operational phases of the development on the water environment will not be significant. In addition to this it is expected that the overall quality of the water environment will continue to improve following the safe and successful management of the contamination across the site.
- 12.12 The actual impacts will be measured through the gathering of further baseline water quality data and through the implementation of an appropriate water quality monitoring programme (both surface water and groundwater monitoring) during the remediation/operational phases of the project. The results from the remediation phase will be incorporated into the verification reports.

13 Effects on Landscape and Visual Impacts

- 13.1 One of the reasons why the site was developed as a factory was that it is well concealed by the natural shape of the landscape. The site lies within the alluvial plain of the Clyde Valley. The majority of the site is fairly flat with the land rising to the north and west. Considering the large size of the site, there are relatively few views into the site. These are generally limited to the local transport network, a limited number of rural properties and parts of Bishopton village which lies on the northern edge of the site.
- 13.2 Many trees have been planted in the site and following the substantial decommissioning of the factory the vegetation has developed giving the site a generally wooded character. The derelict buildings can be seen at times with the taller structures visible above the trees. The existing landscape character of the site contrasts sharply with that of the surrounding area. The dominant features of the site are the woodland and derelict features whereas the surrounding area is dominated by well maintained fields with rural properties and settlements.

- 13.3 The proposed development will result in a significant impact on the landscape and visual resource of the site. The remediation works will take place across the site as the project proceeds but will gradually give way to new land uses. The impact of the remediation works varies across the site due to the variety of remediation works required. The new development includes two new link roads to be built in the surrounding countryside. These introduce new engineered structures which will be assimilated into the landscape with planting. The proposed land uses create an extension to the village of Bishopton. The new buildings will be set within a landscape framework which will accommodate the key landscape features which are retained and add to these. The landscape features of the site have been assessed and integrated into the proposals. For example, the trees on the site have been categorised to maximise the retention of those of best quality. The majority of the site which is more distant from the existing settlement will become a Community Woodland Park returning the derelict industrial landscape back to open space uses.

14 Effects on Fauna and Flora

- 14.1 Aspects of the site ecology have been examined over several years with a focus on particular species and particular habitats.
- 14.2 The information gathered pointed to the general picture of an extensive, secure site relatively undisturbed by the public providing refuge, feeding habitat and breeding ground for a number of protected species, i.e., badgers, bats, barn owls, otters and water voles. With the exceptions of Barochan Moss (a designated site of local conservation interest), some areas of higher ground to the western boundary and some large avenue trees and trees associated with Dargavel House, the site would appear to be unexceptional floristically, principally because the vast majority of the site – primarily the level ground - had been in recent history part of an active factory, with the spaces between buildings hard surfacing or close-mown grass and amenity planting. Areas of the site, particularly around the perimeter, but with some areas toward the north and centre of the site had been planted with conifer (and, latterly, with broadleaved trees) plantation over the last twenty to thirty years. It is apparent that the increasing value to the wildlife as refuge and feeding habitat has arisen out of the gradual running down of Royal Ordnance activity, (with the oldest areas being in the south around the First World War explosives) and the cessation of maintenance of the remaining grassed areas.
- 14.3 The baseline information gathered over a considerable period, allows an ecological characterisation of the site to be established. In this overall characterisation key species and habitats have been identified. These include :
- (a) Bats: There is potential for roosts on the site and, as a consequence, the demolition of certain buildings and the felling of mature trees will need to be progressed in a precautionary way. Artificial roosts could be required as mitigation.
 - (b) Otters: There is the possibility of an otter holt at the southern margin of the site. Future work on watercourses should make provision for the movement of otters.
 - (c) Badgers: There has been a gradual colonisation of the site by badgers from the south of the site to the north. There is a number of main setts and many subsidiary setts. The possibility arises of a need to create artificial setts and to translocate badgers.
 - (d) Reptiles, Amphibians and Associated Habitats: The survey and desk study have not shown the presence of great crested newts. There is no record of reptile activity. Notwithstanding this, measures will need to be put in place to ensure that water habitats suitable for amphibians and reptiles is either protected or created.

- (e) Water Voles: Only a small population of water voles is likely to be present on the site. The future well being of this species will be dependent on the active management of habitat along the margins of watercourses.
- (f) Barn Owls: There is an indication of three pairs of breeding barn owls in the north of the site. There will be disturbance to suitable nesting and roosting sites (which include derelict buildings) and to feeding habitat.
- (g) Kingfishers: There is limited evidence of kingfishers on the site. There is, however, an opportunity to improve habitats for the benefit of kingfishers in the future.
- (h) Breeding Bird Habitat: There will be a loss of bird-breeding habitat but the timing and phasing of remediation and development should minimise the net impacts.

14.4 The major physical changes engendered by the site remediation include:

- (a) Loss of terrestrial habitat (including loss of trees adjacent to buildings which have to be felled) and the disturbance from noise, smoke and vibration, arising from building decontamination and demolition.
- (b) Potential impacts arising from damage to terrestrial habitats associated with remediation and land reclamation. In many instances disturbance will arise from the need to gain access to structures.
- (c) The impacts arising from changes in water quality through run off and disturbance of sediment at the remediation / reclamation stage and the changes in flow rates, relocation of channels and water tables in both the short and long-term.

14.5 A Priority is the protection and maintenance of some of the more valuable site features, including, for instance, mature avenue trees. There are a few of these relict landscape elements. This aside, the simplest and most effective mitigation centres on the main drainage channel (Dargavel Burn) running north-south through the site. Wetland areas (carr/wet/woodland) are amongst the most biodiverse of native habitats. In the local area, wet woodland (carr), swamp, reedbed, marsh, fen and raised bog are all priority biodiversity habitats within the range of 'wetland', and, in practical terms, is one of the easiest to achieve and maintain given the site conditions. This range of habitats may be achieved either by the lowering of ground levels and/or the raising of water table by impeding of drainage.

14.6 A second strand of the mitigation strategy would be in the proposed enhancement of farmland (within the planning application boundary). This land could be enhanced in, for instance, the creation of species-rich hedgerow with trees and in uncultivated field margins to land currently in arable production. The landscape could be further enhanced in the provision of nesting boxes and feeding perches. This would help not only in mitigation for species on site but also in the creation of a more biodiverse buffer strip between the site and the surrounding land.

15 Effects on Material Assets and Architectural/Archaeological Heritage

15.1 Within the site boundary, there are three issues concerning heritage. They are:

- Known buried archaeology
- Unknown buried archaeology
- Standing buildings

Known Below Ground Archaeology

- 15.2 The known remains indicate that the site has been utilised across both prehistory and history.
- 15.3 Known prehistoric archaeology includes enclosures of probable prehistoric date and a variety of artefacts and findspots including axes, hammer stones, flint arrowheads and Roman coins. These remains demonstrate that the site was utilised between c.4000 BC and AD 400.
- 15.4 The next period of known archaeological remains covers the medieval and post-medieval periods (AD 400 to 1900) and includes Dargavel House, designed landscape and the numerous farmsteads that have been located within the development area.
- 15.5 Finally the modern 20th century remains include the 'Georgetown' armaments factory, from which Bishopton factory took its lead, and the various earlier phases of the Bishopton factory.

Mitigation

- 15.6 Given the known location of below ground archaeological sites in the area, trial trenching should target these areas. Additionally, given the known previous disturbance on this site, trial trenching should also be targeted on those areas that have been least disturbed.

Unknown Below Ground Archaeology

- 15.7 The known archaeological record for the area strongly suggests that unknown archaeological remains from across prehistory and history could be present within the site. The state of preservation of such remains is unclear. However, the fact that the site contains areas that have not been subject to intensive agriculture within the 20th century indicates that any remains could be quite well preserved.

Mitigation

- 15.8 Unknown archaeological sites are an inherent risk with any new development where groundbreaking work is to take place. However, if a currently unknown site is discovered then a specific mitigation strategy will be implemented depending upon the nature, condition and significance of the site. This may include trial trenching.

Standing Buildings Within the Development Area

- 15.9 There is one listed building within the proposed development area, that of Dargavel House. Any alterations to this building, or its setting, will require listed building consent but it is understood that there are no plans to alter this building or its setting at the present time. Future developments on the site close to the house will however be subject to stringent review from the heritage bodies in Scotland and the local authority.
- 15.10 The remainder of the standing buildings within the proposed development area constitute the factory. This factory was a significant example of the infrastructure and investment required to equip a nation's armed forces during the 20th century, indeed, ammunition from here would have been at the sharp end of British foreign policy during the majority of Britain's modern

conflicts. The factory buildings also represent the last tangible remains of the many individuals who made up the workforce, a workforce drawn from families throughout Scotland and the greater British nation as a whole.

- 15.11 The complex has both community and historic value and forms an element of Scotland's industrial narrative. Equally, the complex holds considerable significance for the local community.

Mitigation

- 15.12 It is recommended that sample recording be undertaken of the types of buildings across the site. This will inform the Industrial Archaeological record of the types of processes involved at Bishopton as well as indicating changes in the production methods throughout the 20th century.

General Mitigation

- 15.13 A Site Archaeological Handbook (SAH) should be adopted as the management system for this development. In it, each of the three archaeological elements would be dealt with separately and in a systematic manner in line with the time-frame for the development.
- 15.14 The SAH applies an overarching strategy for handling the archaeological elements of the site so that work can be structured and managed efficiently and more effectively. The advantage that the SAH has over a more fractured approach is that the archaeological mitigation for the whole development is clearly defined at the beginning of the project.

16 Inter-Relationships and Conclusions

- 16.1 The regeneration of the site, given its scale and diverse character, will bring environmental consequence. No one environmental topic can be considered in isolation. There will be complex inter-relationships between environmental issues through the course of remediating the site and over the period of its development.
- 16.2 Remediation will be progressive and will take place over a long period. There will be remediation activity in different parts of the site at different times. This activity has the potential to impact directly on soils and the water environment. It is important that a remediation Management Plan is produced to give guidance on the procedures and actions that will minimise the potential for adverse impact on soils and ground / surface water.
- 16.3 Remediation will have a particular impact on the flora and fauna at the site. The scale of the site, and the fact that remediation will be progressed in phases, presents opportunities to create replacement habitats for displaced species. The ecology of the site, however, is dynamic and, as a consequence, measures to preserve the bio-diversity of the site will need to be adapted and refined over the full life of the project.
- 16.4 Remediation tasks will also cause an impact on the noise environment and on air quality. Measures will need to be in place to reduce or minimise these impacts, particularly in the early phases of remediation when activity is closest to Bishopton.
- 16.5 There will be an impact on landscape character and the visual resource of the site. This will be caused by the removal of buildings and structure and through the felling of trees. The essential wooded character of the site, however, will be retained.
- 16.6 In those parts of the site which were not disturbed when the factory was built there is potential for below ground archaeological remains. These could be disturbed through the process of

remediation and a limited amount of trial trenching is recommended as a precautionary measure.

- 16.7 The new development is conceived as a managed expansion of Bishopton. It will occupy less than 25 per cent of the planning application site. It is compact in nature and will be integrated with the existing village in a variety of ways. This will lessen the extent to which new development impacts on the landscape and on local views. The majority of the site will be formed into a Community Woodland Park whereby derelict factory will be returned to open land uses of a countryside character. This will be a positive impact.
- 16.8 There will be socio-economic impacts. On the one hand there will be greater diversity in housing and employment opportunities whilst, on the other hand, there will be increased demand on community infrastructure. The latter brings a need to strengthen and expand community facilities and services as the development proceeds.
- 16.9 The increased traffic associated with the new development will bring its own consequences. The early phase of new development relies upon access from existing road links between the site and the village. Provided that traffic flows are managed, and accepting that there are capacity limits, then the projected impacts along these access routes are not environmentally significant. Traffic in later phases of development will be directed to the wider road network via new links to the south and north of Bishopton. The construction of these links, together with the strengthening of public transport facilities, will ensure that the long term consequences of increased traffic generation will not be significant from an environmental perspective. Noise and air quality assessments relating to increased traffic generation have not shown significant environmental impacts.
- 16.10 The development will have a direct impact on the surface-water environment. Increased run-off from a larger area of hard surface presents risks of flooding and the need to accommodate storm water. A Flood Risk Assessment (FRA) has provided the basis for mitigation measures to reduce flood risk to acceptable levels and for the design of an integrated and sustainable surface water drainage system.